CLAIMS:

1. An environmentally compatible process for treating plant matter and foodstuffs, during storage, distribution and marketing, preplanting, growing, and pre and post harvest, to increase yields and yields of marketable sizes, eliminate health hazards, impart storage stability, extend shelf life and inhibit premature sprouting, rooting, "black-heart" formation, germination, blossoming, and losses in quality and/or quantity of said plant matter and foodstuffs as result of premature sprouting, rooting, "black-heart" formation, germination and blossoming, said plant matter and foodstuffs including tubers – such as potatoes, bulbs, seeds grains and other germinating matter or items, plant vegetative propagation matter or items, as well as various fruits and vegetables including solanaceous fruits and vegetables, by treating the said plant matter or foodstuffs, plant matter and foodstuffs, during storage, distribution and marketing, preplanting, growing, and pre and post harvest, with an effective aqueous dosage comprising an effective concentration of hydrogen peroxide and optionally comprising, an effective dosage of one or more additional components selected form the following types of substances:

(i) effective trace concentrations of dispersed metals or metal ions;

(ii) effective concentrations of other and/or additional hydrogen peroxide activators, synergists and promoters;

(iii) effective concentrations of hydrogen peroxide stabilizers and modifiers;

(iv) effective concentrations of pH regulators;

(v) effective concentrations of organic and/or inorganic additives,

AMENDED SHEET

wherein the effective concentration of hydrogen peroxide, time of treatment and form of application are such as to prevent such plant matter and foodstuffs quality and/or quantity loss, but at the same time not so high as to cause or induce damage to the plant matter and foodstuffs themselves.

2. A process as in claim 1, wherein the hydrogen peroxide concentrations is in the range from 0.001% to 50%.

3. A process as in claim 1, wherein the hydrogen peroxide treatment is intermittent with intervals of several weeks and its concentration is in the range from 0.01% to 20%.

4. A process as in claim 1, wherein the hydrogen peroxide treatment is intermittent with intervals of several weeks and its concentration is in the range from 0.1% to 15%.

5. A process as in claim 1, wherein between the intermittent hydrogen peroxide treatments, there is an addition, continuous or short interval supplementary treatments with solutions with hydrogen peroxide concentration in the range from 0.001% to 50%.

6. A process as in claim 1 ~~any of claims 1-5~~, wherein the metals or metal ions concentration is in the range from 1 PPB to 50,000 PPM.

7. A process as in claim 1 ~~any of claims 1-5~~, wherein the metals or metal ions concentration is in the range from 10 PPB to 20,000 PPM.

8. A process as in claim 1 ~~any of claims 1-5~~, wherein the metals or metal ions concentrations is in the range from 50 PPB to 1,000 PPM.

9. A process as in ~~any of claims 6-8~~ claim 6, wherein the metal ion is silver ion.

10. A process as in ~~any of claims 6-8~~ claim 6 wherein the metal ion is copper ion.

11. A process as in ~~any of claims 6-8~~ claim 6, wherein the metals ions are a mixture of silver and copper ion.

12. A process as in ~~any of claims 1-11~~ claim 1 in which the treatment solution contains in addition to hydrogen peroxide, one or more substances selected from such as but not limited to, dispersions of metals, non-metals, or ions (of various valences when appropriate) such as, copper, zinc, nickel, iron, potassium, manganese, silver, chromium molybdenum, magnesium, boron, phosphorus, iodine, sulfur, citrate, etc., or combinations thereof.

13. A process as in ~~any of claims 1-11~~ claim 1 in which the treatment solution contains in addition to hydrogen peroxide and dispersed metals or metal ions, one or more hydrogen peroxide or trace activator stabilizers or modifiers, such as but not limited to citric acid, tartaric acid, boric acid or bromic acid.

14. A process as in ~~any of claims 1-11~~ claim 1 in which the treatment solution contains in addition to hydrogen peroxide and dispersed metal or metal ions, one or more pH regulators selected from mineral acids and/or organic acids, said mineral acids including phosphoric acid, nitric acid, hydrochloric acid and sulfuric acid and said organic acids including peracetic acid.

15. A process as in ~~any of claims 1-11~~ claim 1 in which the treatment solution contains in addition to hydrogen peroxide and dispersed metal or metal ions, one or more organic or inorganic additives selected from peracetic acid, phenol, gelatin, glycerin, sodium azide, polymoxin B, sodium bicarbonate, pectin, salicylic acid, etc.

16. A process as in ~~any of claims 1-15~~ claim 1, wherein the foodstuffs and plant matter are treated by dipping them in the said solution.

17. A process as in claim 16, wherein the hydrogen peroxide concentration of the said solution is between 0.01-20%.

18. A process as in claim 16, wherein the hydrogen peroxide concentration of the said solution is between 0.01-10%.

19. A process as in claim 16, wherein the hydrogen peroxide concentration of the said solution is between 0.01-5%.

20. A process as in claim 16, wherein the hydrogen peroxide concentration of the said solution is between 0.01-1.5%.

21. A process as in claim 16, wherein the hydrogen peroxide concentration of the said solution is between 0.01-0.5%.

22. A process as is ~~any of claims 1-15~~ claim 1, wherein the foodstuffs are treated by spraying of the said solution on them.

23. A process as in claim 22, wherein the hydrogen peroxide concentration of the said solution is between 0.01-20%.

24. A process as in claim 22, wherein the hydrogen peroxide concentration of the said solution is between 0.01-10%.

25. A process as in claim 22, wherein the hydrogen peroxide concentration of the said solution is between 0.01-5%.

26. A process as in claim 22, wherein the hydrogen peroxide concentration of the said solution is between 0.01-1.5%.

27. A process as in claim 22, wherein the hydrogen peroxide concentration of the said solution is between 0.01-0.5%.

28. A process as in ~~any of claims 1-15~~ claim 1 wherein the foodstuffs are treated by spraying of the said solution on them with a fogger-sprayer that produces microdroplets.

29. A process as in claim 28, wherein the hydrogen peroxide concentration of the said solution is between 0.01-40%.

30. A process as in claim 28, wherein the hydrogen peroxide concentration of the said solution is between 0.01-20%.

31. A process as in claim 28, wherein the hydrogen peroxide concentration of the said solution is between 0.01-15%.

32. A process as in ~~any of claims 28-31~~ claim 28 wherein said microdroplets are in the size range of up to 1000 microns in diameter.

33. A process as in ~~any of claims 28-31~~ claim 28 wherein said microdroplets are in the size range of up to 500 microns in diameter.

34. A process as in ~~any of claims 28-31~~ claim 28 wherein said microdroplets are in the size range of up to 100 microns in diameter.

35. A process as in ~~any of claims 28-31~~ claim 28 wherein said microdroplets are in the size range of up to 50 microns in diameter.

36. A process as in ~~any of claims 28-31~~ claim 28 wherein said microdroplets are in the size range of up to 40 microns in diameter.

37. A process as in ~~any of claims 28-31~~ claim 28 wherein said microdroplets are in the size range of up to 30 microns in diameter.

38. A process as in ~~any of claims 28-31~~ claim 28 where said microdroplets are in the size range of up to 20 microns in diameter.

39. A process as in ~~any of claims 28-31~~ claim 28 wherein said microdroplets are in the size range of up to 10 microns in diameter.

40. A process as in ~~any of claims 28-31~~ claim 28 wherein said microdroplets are in the size range of 1-10 microns in diameter (dry fog).

41. A process as in ~~any of claims 28-31~~ claim 28 wherein said microdroplets are in the size range of 0.01-1 micron in diameter (fumes).

42. A process as in any of claims 28-31 wherein said microdroplets are in the size range of 0.001-0.01 micron in diameter (smoke).

43. Plant-matter and foodstuffs when treated substantially as hereinbefore described in any of claims 1-42.

44. A process for inhibiting premature sprouting and enhancing the productivity in plant growth material, e.g., potatoes, potato tubers, potato growth material or other plant growth material, by effecting Epical Dominance Breakdown in said potatoes, potato tubers, potato growth material or other plant growth material, comprising treating the potatoes, potato tubers, potato growth material or other plant growth material with an effective aqueous dosage comprising an effective

concentration of hydrogen peroxide and optionally comprising, one or more additional components selected from the following types of substances:

(i) effective trace concentrations of dispersed metals or metal ions;

(ii) effective concentrations of other and/or additional hydrogen peroxide activators, synergists and promoters;

(iii) effective concentrations of hydrogen peroxide stabilizers and modifiers;

(iv) effective concentrations of pH regulators;

(v) effective concentrations of organic and/or inorganic additives.

45. A process for effecting Epical Dominance Breakdown in plant growth material, e.g., potatoes, potato tubers, potato growth material or other plant growth material, comprising treating the potatoes, potato tubers, potato growth material or other plant growth material in accordance with any of claims 1-42.

46. Potatoes, potato tubers and potato and other plant growth material, treated to bring about Epical Dominance Breakdown in accordance with any of claims 1-42.

47. A composition for treating in an environmental friendly manner, plant matter and foodstuffs, during storage, distribution and marketing, preplanting, growing, and pre and/or post harvest, to increase yields, eliminate health hazards, impart storage stability, extend shelf life and inhibit premature sprouting, rooting, "black-heart" formation, germination, blossoming, decay, pathogenic losses and other processes causing losses in quality and/or quantity of said plant matter and foodstuffs, and promote epical dominance breakdown, said plant matter and foodstuffs including tubers such as potatoes, bulbs, seeds grains and other

germinating matter or items, plant vegetative propagation matter or items, as well as various fruits and vegetables including solanaceous fruits and vegetables, said composition being also suitable to treat earth, other growth media and substrates, equipment, materials, water, spaces and surfaces to reduce and eliminate harmful organisms and substances therefrom, comprising

(a) 0.001% to 50% of hydrogen peroxide

(c) 0.001% to 5% of metal ion selected from the group consisting of copper, zinc, nickel, iron, manganese, molybdenum, potassium or combinations thereof

and optionally

(i) effective trace concentrations of other dispersed metals or metal ions;

(ii) effective concentrations of other and/or additional hydrogen peroxide activators, synergists and promoters;

(iii) effective concentrations of hydrogen peroxide stabilizers and modifiers;

(iv) effective concentrations of pH regulators;

(v) effective concentrations of organic and/or inorganic additives.

48. A composition for treating in an environmental friendly manner, plant matter and foodstuffs, during storage, distribution and marketing, preplanting, growing, and pre and/or post harvest, to increase yields, eliminate health hazards, impart storage stability, extend shelf life and inhibit premature sprouting, rooting, "black-heart" formation, germination, blossoming, decay, pathogenic losses and other processes causing losses in quality and/or quantity of said plant matter and

foodstuffs, and promote epical dominance breakdown, said plant matter and foodstuffs including tubers-such as potatoes, bulbs, seeds grains and other germinating matter or items, plant vegetative propagation matter or items, as well as various fruits and vegetables including solanaceous fruits and vegetables, said composition being also suitable to treat earth, other growth media and substrates, equipment, materials, water, spaces and surfaces to reduce and eliminate harmful organisms and substances therefrom, comprising

(a) 0.001% to 50% of hydrogen peroxide

(b) 0.001% to 2.5% of silver ion

(c) 0.001% to 2.5% of metal ion selected from the group consisting of copper, zinc, nickel, iron, manganese, molybdenum, potassium or combinations thereof

and optionally

(i) effective trace concentrations of other dispersed metals or metal ions;

(ii) effective concentrations of other and/or additional hydrogen peroxide activators, synergists and promoters;

(iii) effective concentrations of hydrogen peroxide stabilizers and modifiers;

(iv) effective concentrations of pH regulators;

(v) effective concentrations of organic and/or inorganic additives.

49. An environmentally compatible process for reducing and eliminating harmful organisms and substances form earth and other growth media and substrates, by treating the said earth, other growth media and substrates, with an effective dosage of a composition comprising an effective concentration of hydrogen peroxide and optionally comprising, an effective dosage of one or more additional components selected from the following types of substances:

(i) effective trace concentrations of dispersed metals or metal ions;

(ii) effective concentrations of other and/or additional hydrogen peroxide activators, synergists and promoters;

(iii) effective concentrations of hydrogen peroxide stabilizers and modifiers;

(iv) effective concentrations of pH regulators;

(v) effective concentrations of organic and/or inorganic additives.

50. Process as in claim 22 wherein the air to liquid volume ration in the fog is between 300:1 and 1200:1.

51. Process as in claim 22 wherein the air to liquid volume ration in the fog is between 500:1 and 700:1.

52. Process as in claim 22 wherein the air to liquid volume ration in the fog is between 300:1 and 1200:1.

AMENDED SHEET

53. Process as in claim 28 wherein the air to liquid volume ration in the fog is between 500:1 and 700:1.

54. An environmentally compatible process for treating plant matter and foodstuffs, during storage, distribution and marketing, preplanting, growing, and pre and post harvest, to increase yields and yields of marketable sizes, eliminate health hazards, impart storage stability, extend shelf life and inhibit pathogenic losses and other processes causing losses in quality and/or quantity of said plant matter and foodstuffs, said plant matter and foodstuffs including tubers – such as potatoes, bulbs, seeds, grains and other germinating matter or items, plant vegetative propagation matter or items, as well as various fruits and vegetables including solanaceous fruits and vegetables, by treating the said plant matter or foodstuffs, plant matter and foodstuffs, during storage, distribution and marketing, preplanting, growing, and pre and post harvest, with a synergistic effective aqueous dosage comprising an effective concentration of hydrogen peroxide and silver ion and optionally comprising, an effective dosage of one or more additional components selected form the following types of substances:

(i) effective trace concentrations of dispersed metals or metal ions;

(ii) effective concentrations of other and/or additional hydrogen peroxide activators, synergists and promoters;

(iii) effective concentrations of hydrogen peroxide stabilizers and modifiers;

(iv) effective concentrations of pH regulators;

(v) effective concentrations of organic and/or inorganic additives, wherein the effective concentration of hydrogen peroxide, time of treatment and form of application are such as to prevent such plant matter and foodstuffs quality and/or quantity loss, but at the same time not so high as to cause or induce damage to the plant matter and foodstuffs themselves.

55. Plant-matter and foodstuffs when treated substantially as hereinbefore in claim 54.

56. An environmentally compatible process for reducing and eliminating harmful organisms and substances form equipment, materials, water, spaces and surfaces by treating said equipment, materials, water, spaces and surfaces with an effective dosage of a synergistic composition comprising an effective concentration of hydrogen peroxide, silver ion and an effective trace concentrations of dispersed metals or metal ions and optionally comprising, an effective dosage of one or more additional components selected from the following types of substances:

(i) effective concentrations of other and/or additional hydrogen peroxide activators, synergists and promoters;

(ii) effective concentrations of hydrogen peroxide stabilizers and modifiers;

(iii) effective concentrations of pH regulators;

(iv) effective concentrations of organic and/or inorganic additives.

AMENDED SHEET